DOCUMENT RESUME

ED 214 247 EA 014 469

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TITLE Structural Coupling in Schools.
PUB DATE Mar 82
NOTE 36p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982). For a related document, see EA 014 468.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Adjustment (to Environment); Discipline Policy; Elementary Secondary Education; *Interprofessional Relationship; *Job Satisfaction; Principals; *School Attitudes; Specialists; State Surveys; Student Attitudes; *Success; Teacher Administrator Relationship; Teacher Attitudes; Teachers
IDENTIFIERS Kansas; *School Effectiveness; *Structural Coupling (Organizations)

ABSTRACT

The relationship between structural coupling within schools and school effectiveness was examined through two questionnaire surveys of 89 public elementary and secondary schools in Kansas. The measures of school effectiveness included teacher perceptions of their school's adaptability and goal attainment, teacher job satisfaction, and student attitudes toward school. Structural coupling was measured by seven variables, comprising work interdependence among teachers and between teachers and learning disability specialists, school discipline procedures, teacher isolation, and teacher communication with principals, other teachers, and learning disability specialists. The two surveys covered 1,697 teachers and 880 students in the fall and 1,442 of those teachers and all the same students the following spring. Analysis of the coupling variables using measures of central tendency indicated the schools were loosely coupled. Correlation coefficients showed significant, positive correlations between the coupling variables and the measures of school effectiveness. This suggests schools with tighter coupling are more effective. The correlations were stronger in the spring than the fall. The authors suggest further research on schools' structural configurations, sociometric interaction patterns, and methods of structural coupling. (RW)

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STRUCTURAL COUPLING IN SCHOOLS

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Paper Presented at the Annual Meeting of the
American Educational Research Association
New York City, 1982

EA 014 469

STRUCTURAL COUPLING IN SCHOOLS*

In the literature dealing with educational organizations, an accepted generalization is that the dominant school form in the United States has become large scale units structured as bureaucracies and managed by political systems (Meyer and Rowan, 1978). A common assumption is that, as the scale of schools expanded, higher levels of coordination and integration were required. Bureaucratic controls then emerged to structure the activities efficiently. The basic premise is that multitiered organizations are necessary to communicate accurately the school system's objectives from top to bottom, to monitor actions and outcomes, and, if necessary, to order corrective actions (Ouchi, 1978).

Many scholars have recently started to reject the notion of schools as tightly linked bureaucracies and to accept the proposition that schools lack close internal coordination, especially for the content and methods of instruction. For example, Meyer and Rowan (1978) concluded that instruction tends to be removed from the control of the organization structure, in both its bureaucratic and colleague aspects. Moreover, Dornbusch and Scott (1975) discovered no evidence of effective evaluation or control in school systems. As a result of such findings and similar observations, March and Olsen (1976) and Weick (1976), conceived the structure of schools as being loosely coupled. In fact, speculation has been particularly frequent about the strong effects of structural coupling or linkages on school outcomes.

An area also needing further conceptual and empirical development is organizational effectiveness of schools. When this topic is discussed,

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*This research was supported by the University of Kansas Learning Disabilities Institute which is funded under a contract with the Office of Special Education, U.S. Department of Education.

accountability, quality, student achievement, innovation, and morale represent outcomes that frequently are proposed as effectiveness criteria. Many of the arguments or discussions conclude with the generalization that effectiveness cannot be defined and measured. As a central theme in the operation of schools, the difficult questions involving school effectiveness cannot be avoided. Education is not devoid of effectiveness indicators. Educators and members of the public acknowledge that different schools achieve different degrees of success, even with similar student populations.

Integrating structural coupling with theoretically based ideas of organizational effectiveness and testing the posited relationships could produce significant insights for practitioners and scholars. Structural coupling defines mechanisms in schools that guide the behavior of individuals. The formulation and implementation of individualized educational programs (IEPs), for instance, require high levels of cooperation among teachers. Therefore, the effectiveness levels of existing and proposed programs for learning disabled and, indeed, all students depend on the linkages of teachers, technical specialists and administrators. Based on the need and importance to understand the relationships among the structural and effectiveness variables, two purposes guided the investigation: (a) to determine the associations between structural coupling and four indicators of school effectiveness; and (b) to assess the stability of the relationships during a school year.

Conceptual Perspective for School Effectiveness

To ask a global question about whether a school is effective or ineffective is a non-productive exercise. Effectiveness is not one thing. A school can be both effective and ineffective depending upon the criteria

used, which may be independent of one another. Therefore, a basic assumption guiding the development of a definition of school organizational effectiveness was that the concept is multidimensional. Four concepts were used as indicators of organizational effectiveness: perceived adaptibility, perceived goal achievement, teacher job satisfaction, and student attitudes toward school.

The selection of these four criteria was based on the four critical functions--adaption, goal attainment, integration, and latency--that Parsons (1960) postulated were necessary for the survival of a social system. Adaptation is concerned with the system's need to control its environment. Schools accommodate themselves to the basic demands of their environment by attempting to transform the external situation and by changing their internal programs to meet new conditions such as demands for programs to assist children with special needs. Goal achievement is the attainment of system goals. The system defines its objectives and mobilizes its resources to achieve these desired ends. Typical indicators of goal gratification for educational organizations are academic achievement, productivity, efficiency, and the quality of students and services. Integration refers to a social solidarity within the system. It is the process of organizing, coordinating, and unifying social relations into a single structure. Among the primary social concerns of the school are employee job satisfaction and morale. Finally, latency is the maintenance of the value system. Effective schools require high commitment and appropriate behavior by educators and students to reinforce the organization's norms and values. An indicator of latency is the attitudes of students toward school. Thus, four criterion variables constituted a theoretically based composite of performance indicators.

Conceptual Perspective for Structural Coupling of School Activities

Loose coupling means that the parts, units, or subsystems are relatively disconnected and lack interdependencies. Weick (1976) described the concept with the image that while the parts of a school are responsive to one another, each preserves its own identity and physical or logical separateness. A result is that the activities of one part impact other units less than had been assumed. The change in perspective from schools as tightly linked to loosely coupled organizations suggests that some school functions are less interdependent than would be predicted by traditional bureaucratic theory. Bidwell (1965) had proposed this change earlier with the observation that schools are characterized by structural looseness for instructionally related activities such as curriculum and technology, evaluation, and direct authority over instruction.

Mintzberg (1979) provided a background for understanding coupling as an important concept of organization. He conceived organizations as being composed of five parts: strategic apex, support staff, technostructure, middle line, and operating core. As professional bureaucracies all five parts are present in school systems. However, the technostructure, middle line, and operating core are most directly involved in the instructional processes.

The technostructure is comprised of specialists who serve the school by affecting the work of others. While being removed from the primary work flow, they may design, plan, and change the instructional processes or train people who do (Mintzberg, 1979:29). These specialists are concerned with adaptation to meet environmental changes and with standardization to reduce the need for direct supervision. In schools the technostructure staff provides a variety of services, such as curriculum super-

vision, student guidance and counseling, and special education activities to help the teachers better perform their tasks. During the past few years, the number of special education specialists has increased dramatically to meet the changing demands for services to children with various disabilities and to standardize the responses to similar needs.

The middle line of schools is composed primarily of principals. They have authority over the operating core and embody the coordinating mechanism of direct supervision. Among the many tasks that middle-line administrators perform are the development of liaison contacts and communication of information within their schools. However, the most time-consuming roles involve negotiating and nandling disturbances. For principals this includes working with teachers to resolve issues of student discipline.

Educational organizations are professional bureaucracies which depend primarily on the standardization of skills in the operating core of instruction for coordination rather than direct supervision by the middle line. School systems assume that teacher training programs and state certification standards produce teachers with adequate competencies to perform the teaching tasks. Once teachers are placed in classrooms, they make most of the instructional decisions and little supervision is required.

With a high degree of independence, formal linkages or flows may be limited in quantity and may have little impact on the work process in schools, a situation described by Thompson (1967:54) as pooled interdependence. This condition has little need for linkages among members of the organization because each part makes a discrete contribution to the whole, and each is supported by the whole. In schools characterized by pooled

coupling, teachers may share facilities, equipment and budget, but work alone with students. Teachers working in isolation have little need for coordinating mechanisms or structural linkages with each other or with personnel in other parts of the school. The classic illustration is that teachers close the doors and conduct their classes independently of others. Except in special circumstances, only the students observe the instructional processes of teachers. Administrators, technostructural staff, and colleagues, therefore, have limited direct influence on what teachers do in their classrooms. This conclusion is generally supported by the finding that within a given school teachers, exhibit little agreement when describing school and classroom practices (Meyer, Scott, Cole, and Intill, 1978).

In schools using more traditional designs, work dependencies for teaching and planning typically occur on an informal and low frequency basis. Teachers occasionally share ideas and teaching techniques. The informal linkages are fluid. The exceptions are situations in which teachers, principals, or technostructural staff already are interdependent through team or group activities such as writing and evaluating IEPs. The formal school organization often develops strategies to tie various parts of the school together. Teachers are involved in periodic inservice training programs, faculty meetings, and committee assignments. These represent attempts by the organization to couple or link the parts of the school system together for greater coordination and control.

Similarly, Bridges and Hallinan (1978) maintained that work system interdependence is present in schools where a high frequency of teacher interaction is present. They found that work system interdependence, communication, and group cohesion among teachers were all significantly re-

lated to each other. Interactions among teachers, administrators, and technical specialists occur to coordinate the work activities and to satisfy human social needs. Team or group activities such as cooperative planning and communication reduce the structural looseness in a school's operating core. Some organizational configurations and group practices do promote structural linkages. For example, evidence was found to support the argument that newer methods of teaching in open space schools tend to move teachers into collaborative arrangements and away from the traditional arrangement of isolated classroom teachers (Cohen, Meyer, Scott, and Deal, 1979:29). In addition, teachers and other personnel within and across subject areas and special services in the technostructure may formally or informally assume the shared responsibility for accomplishing a set of educational objectives. They collaborate; that is, educators communicate and plan interdependent sequences of classroom or other activities. The teachers then become responsive to each other and if changes occur in the content or process of the operating core, an impact is made on the others. These assertions are attenuated somewhat by Bredo's (1977:308) conclusion that even among teachers on teams, interdependent activities are relatively infrequent and of limited influence.

In sum, linkages or coupling mechanisms bind the parts of a school organization together. Important indicators of structural coupling in schools include: for the operating core, the work system interdependence among teachers and communication among teachers; for the operating core and middle line administrators, the communication between the principal(s) and teachers and discipline procedures; and for the operating core and the technostructure, the communication of teachers with LD specialists and work system interdependence of teachers and LD specialists. Finally, isolation,

as the number of hours teachers spend in school working independently of other adults, indicates a lack of structural coupling or linkages within the operating core and with other parts of the system.

Posited Relationships for Structural Coupling and Indicators of School Effectiveness

The literature contains evidence that structural coupling in schools is systematically related to the indicators of organizational effectiveness. Extrapolating the existing knowledge to the present study allows for the development of theoretical rationales and hypotheses for the variables.

Adaptability

Of all the criteria for organizational effectiveness, Steers (1975) found that adaptability and the closely related concepts of flexibility and innovation are the indicators used most frequently by researchers as effectiveness measures. Generally, adaptability ties the capacity of organizations to modify their operating procedures with internal and external forces that induce change. In schools, adaptiveness can be defined as the abilities of professional educators to perceive forces of changes and to initiate new policies and practices to meet emergent demands. Innovation represents a major problem for professional bureaucracies because major innovation requires cooperation and communication across disciplines within the operating core and across parts of the schools (Mintzberg, 1979:374-376).

Findings by Miskel (1977) indicate that schools described as using administrative planning, research and evaluation procedures, having free and open communication, and making decisions participatively also initiated or maintained a high level of innovativeness. Moreover, effective

communication is particularly important for the effective functioning of organizations that face an uncertain or changing environment (Steers, 1977:147). Similarly, Baldridge and Burnham (1975:175) found that communication linkages in schools were positively related to the adoption of innovations. Therefore, conceptual and empirical evidence exists to support the following hypothesis.

Hypothesis One. The structural coupling variables will be significantly correlated with the perceived adaptability of schools.

Perceived Goal Achievement

When discussing school goal achievements, many parents, government policy makers, and scholars define the concept too narrowly. Usually, they mean student scores on standardized tests measuring cognitive skills. However, educators produce a number of products and services that represent goal attainments. For example, student learning, instruction, new curricula, athletic achievements, art and music programs, and teacher-parent meetings are produced in schools. Hence, the effectiveness levels of schools vary not only in the quantity and quality of their products and services, but also in the efficiency of production.

Using concepts closely related to structural coupling, Mott (1972) found that in more centralized organizations, perceived effectiveness tended to be lower. However, effectiveness was greater when the tasks were structured and the climate was open. The findings of O'Reilly and Roberts (1977:679), that accuracy and openness of communication are related to perceived organizational effectiveness, also support of Mott's conclusions. Similarly, research findings in educational organizations uphold Mott's conclusions. Formalization, specialization among educators, and climates characterized by open communication, participation, and high

motivation were conducive to teachers perceiving the school as being effective (Miskel, Fevurly and Stewart, 1979). After reviewing literature, Hellriegel and Slocum (1975:263) concluded that numerous studies have found a significant positive relationship between organizational climate and a number of indicators of effectiveness. Based on this evidence, the following hypothesis was drawn.

Hypothesis Two. The structural coupling variables will be significantly correlated with perceived goal achievement of schools.

Job Satisfaction

Defined as a present and past oriented affective state that results when the educator evaluates his or her work role, job satisfaction represents a key indicator of integration or social solidarity. After reviewing the literature, Ratsoy (1973) concluded that teacher job satisfaction, in general, was lower in schools where teachers perceive a high degree of bureaucracy. Bureaucratic factors which enhance status differences among the professionals produce low levels of satisfaction. In contrast, greater participation in planning and decision making, especially concerning instructional methods, yields enhanced teacher job satisfaction (Belasco and Alutto, 1972; Mohrman, Cooke, and Mohrman, 1978). Similarly, Bridges and Hallinan (1978:32) found that work system interdependence was positively related to group cohesion and negatively related to teacher absenteeism. Moreover, both the downward and lateral directionality of communication are significantly correlated with job satisfaction, with the downward direction being positively related and the lateral direction being negatively related with job satisfaction, respectively (Muchinsky, 1977:603). Employees who are dissatisfied with their jobs may restrict their communication primarily to their co-workers. However, the findings of Forsyth

and Hoy (1978) reveal that educators isolated from friends and coworkers exhibit high levels of alienation. Based on this reasoning, the following hypothesis was drawn.

Hypothesis Three. The structural coupling variables will be significantly correlated with teacher job satisfaction.

Student Attitudes

How the students describe the learning environments represents the effectiveness of schools in meeting the latency needs of social systems. Grandjean and Vaughn (1981:288) demonstrated that several factors explained individual variation in attitudes of students toward schools. Positive views tend to be held by students who, for example, take classes in the non-college track, are socially active, receive high grades, or feel that students have appropriate influence on school policies. The investigators speculated that mechanisms explaining the differences could be social-psychological, structural, or both. It seems reasonable to expect that these factors would include teacher linkages within school which could facilitate student activity and participation. Teachers who plan and communicate more frequently with other educators should be able to offer students more opportunities to excel than less interactive teachers. Therefore, support exists for the following statement.

Hypothesis Four. The structural coupling variables will be significantly correlated with student attitudes toward school.

METHODOLOGY

Sampling and Data Collection Procedures

The population for the study was 89 public elementary and secondary schools in Kansas. Although procedures were not used that ensured a ran-

dom sample, care was taken to select urban, suburban, and rural schools from diverse geographic areas of Kansas. For example, schools from the largest districts in the state were included as well as schools from districts with less than 500 students. Of the 92 schools that were selected, 89 (97%) agreed to participate in the study.

While the unit of analysis was the school, most of the data were collected from teachers and students. From faculty rosters three groups of teachers were chosen using a table of random numbers. When the school was large enough, eight teachers were chosen for each group or 24 total. If a school had less than 24 teachers, then the number for each group was reduced proportionately. A total of 1,988 teachers were included in the sample. Using an original and two follow-up mailings, 1,697 (85%) teachers returned the measures in the first round. In the spring 1980 or the second round, only the 1,697 that had participated earlier were sent the same measure as the one they had completed in the fall 1980. A total of 41 teachers were no longer in the schools. Of the 1,658 that remained, 1,442 (87%) returned the instruments. This return rate means that the overall participation level was 73% of the initial sample.

In addition, ten students from each school or 890 were asked to complete a student attitude measure. Personnel within each school selected these students. In secondary schools, language arts teachers made the selections. In elementary schools, a third grade teacher selected the students. A total of 880 (99%) students participated in each round.

Data Collection Procedures

To reduce the probability of a response set across the different perceptual instruments and, therefore, to maintain methodological independence among the measures, the teachers were randomly divided into three

groups. One-third responded to six of the seven measures of structural coupling, one-third to the scales of a variable not considered in the present paper, and one-third to an indicator of structural coupling (work system interdependence of teachers with learning disabilities specialists), and the criterion variables of job satisfaction, perceived adaptability, and perceived organizational effectiveness.

Since the school was the unit of analysis and not the individual, data were aggregated by averaging the teacher and student responses within each school. The result was scores on 11 variables for each school: seven structural coupling and four indicators of effectiveness.

The data were collected through mail survey procedures. In most cases employees within the districts coordinated the data collection effort. They used the district mail system for sending and returning the measures to the research assistant in the district. In a few instances the federal mail system was used and the measures were returned directly to the principal investigator.

Instrumentation for the Effectiveness Criteria

Adaptation. Perceived adaptability of schools was assessed with a perceptual measure using five items from Mott's (1972) questionnaire. Miskel, Fevurly and Stewart (1979) modified the items for school settings. Angle and Perry (1981) used a similar version to measure the adaptiveness of transportation organizations. Example items were: People in this school do a good job anticipating problems. What proportion of the people in your school readily accept and adjust to the changes? Each item had a five category extent scale which was scored from one to five. The possible range of scores was 5 (low adaptability) to 25 (high adaptability). As estimates of reliability, the alpha coefficients were .80 for the first sample set and .86 for the second.

Perceived goal achievement. Three items adapted from Mott's (1972) instrument by Miskel, Fevurly, and Stewart (1979) were employed to measure perceived goal achievement. This self report questionnaire asked the teachers to specify their perceptions of the quantity of products and services, the quality of products and services, and how efficient the resouces were used. Each item had a five category extent scale which was scored from one to five. The possible range of scores was 3 (low goal achievement) to 15 (high goal achievement). As estimates of reliability, the alpha coefficients were .77 for the first data set and .85 for the second.

Job satisfaction. A seven item measure was used to operationalize this concept. The scale indirectly probed various indicators of job satisfaction. Example items were: I often think of changing jobs; Most other educators are more satisfied with their jobs than I am. The teachers responded using a set of five categories from strongly disagree to strongly agree. The categories were assigned values of one to five and the possible range was from 7 (dissatified) to 35 (satisfied). As an estimate of reliability, the alpha coefficient was .81 (Miskel, Bloom, and McDonald, 1980). For the current samples, the alphas equaled .80 and .86 respectively. The measure has high face validity.

Student attitudes. The perceptions of the school by students were assessed with a measure composed of nine descriptive items. Example items were: Teachers in this school are friendly; Learning is enjoyable. The students responded using a set of five categories from strongly disagree to strongly agree. The categories were assigned values of one to five and the potential range was from 9 (negative) to 45 (positive). The alpha coefficents were .77 for the responses in round one and .79 in round two.

Instrumentation for the Structural Coupling Components

Seven short instruments were used to measure structural coupling. The first for linkages within the operating core is called the intensity of work system interdependence among teachers scale. Developed by Bridges and Hallinan (1978) intensity of work system interdependence is defined here as the sum of scores for the 13 different activities of the staffing pattern inventory. The items deal with coupling or linkages among teachers in the instructional process. The measure lists 13 activities, such as lesson preparation and use of instructional materials, and asks how frequently teachers jointly work together on these items. The response categories ranged from 0 to 5+ and were scored 0 to 5. The frequencies were summed to produce a possible range of 0-65. The higher the score, the higher interdependence or the tighter the coupling. The developers reported that the alpha coefficient as an estimate of reliability was .95 and presented positive indicators of validity. In further developmental efforts, Miskel, Bloom, and McDonald (1980) found as estimates of reliability an alpha coefficient of .91 and a test-retest coefficient after four weeks of .74. Alpha coefficients for the current samples were .92 and .90. In addition, the evidence was strong for construct, convergent, and predictive validity of the intensity of work system interdependence among teachers scale.

Ten items from the intensity of work system interdependence among teachers scale were adapted to form a measure called the intensity of work system interdependence between teachers and LD specialists scale. The new measure was designed to assess linkages between the operating core and the technostructure. The directions for the original measure were rewritten as follows: How often on the average do you jointly engage in each of the

following activities with a learning disabilities specialist? Example items were: jointly select instructional materials; and jointly select topics to be taught. The 10 activities were listed, and the teachers responded by writing a number from 0 to 5+ times per month. The responses were added to produce a score which could range from a low of 0 to a high of 50. The alpha coefficient, as an estimate of reliability, was .93 for both data sets. The validity of the measure for cooperative or joint planning between the operating core and technostructure was supported by the strong indicators of validity for the original instrument.

Coupling also was measured by three versions of a communication measure refined by Bridges and Hallinan (1978). For each of seven topics (five task-relevant and two task-irrelevant), teachers checked the frequency with which they talk with other teachers: daily, several days a week, once a week, once or twice a month, once or twice a semester, and never. The weights assigned to these six frequency categories approximate the absolute magnitude of differences among the categories: daily (5.0), several days a week (2.5), once a week (1.0), once or twice a month (.5), once or twice a semester (.25), and never (0). The communication score is determined by summing the weights of the seven items. The theoretical range of scores was 0 (low) to 35 (high communication frequency). The alpha coefficient as an estimate of reliability was reported by Bridges and Hallinan (1978) as being .88. In addition to the original scale, two other measures were formed by rewriting the directions to ask for the frequency with which teachers talk with the principal and with a learning disabilities specialist. Therefore, three measures of coupling through communication were (a) teachers with teachers, (b) teachers with principal(s) and (c) regular classroom teachers with learning disabilities

specialists. The measures assessed the linkages within the operating core, between the operating core and the middle line, and between the operating core and the technostructure, respectively. In a pilot study the estimates of reliability for the first two measures (alpha coefficients) were .79 and .87 respectively. The test-retest coefficients after four weeks were .73 and .55. In the present samples, the alphas ranged from .80 to .83. Moreover, the findings indicated construct, concurrent, and predictive validity for the two measures (Miskel, Bloom, McDonald, 1980). The communication measure for learning disabilities specialists had alpha coefficients for the current samples of .91 and .97.

The sixth coupling measure, discipline procedures, asked the teachers to describe the student control and discipline processes used in the school. Six items determined the level of linkage between the teachers in the operating core and the principal in the middle line for managing student behavior. An example item was: Teachers consult with the principal or assistant principal(s) about student discipline and control. Five extent categories (always, frequently, often, occasionally, never) were used for each item and were scaled from four to zero with a possible range of scores from 0 (low coupling) to 24 (high coupling). The alpha coefficients were .86 for the first set of responses and .87 for the second.

The final measure of structural coupling was a single item for teacher isolation: Of the total hours that you spend in school each week, how many hours do you work in isolation of other teachers? In contrast to the other more specific measures of coupling, this one indicates a general absence of linkages for the operating core.

Results

The four hypotheses were tested using product-moment correlation coefficients. Correlational coefficients were calculated for the two data sets for each hypothesis. To determine the stability of the correlational coefficients, the results from the first and second data collections are compared and contrasted. The findings from the descriptive statistics are discussed first, followed by the results of the formal tests of the four hypotheses, and finally a set of related findings will be presented and discussed.

Means and Standard Deviations

The means and standard deviations for the seven coupling and four outcome variables from both data collection efforts are given in Table 1. In most cases six structural coupling variables exhibit scores that are considerably below their conceptual means. For example, the scores for work system interdependence among teachers, with a potential range of 0-65 and a conceptual mean of 32.50, have means of 20.08 and 17.53 for the first and second data collections, respectively. The means are even lower for the work system interdependence between teachers and learning disabilities specialists. With a possible range of 0-50 and conceptual mean of 25, the actual means of 6.92 and 6.71 indicate that cooperative planning on the average for each of the work system interdependence between teachers and LD specialists items occurs less than once a semester. However, the standard deviations are quite large which suggests a wide variation between schools. The averages for the three communication scales also show dramatic differences. With a possible range of 0-35 and a conceptual mean of 17.5, the means range from a low of 3.17 for communication of regular classroom teachers with learning disabilities specialists in the spring

semester to a high of 11.27 for communication among classroom teachers in the fall semester. In other words, teachers reported that they communicate on each item with other teachers several times a week, with the principal about once a month, and with learning disabilities specialists about once a month. In contrast, the scores on the scale measuring discipline procedures for student control are slightly above the conceptual mean of 12 (range of 0 to 24). The means of 15.38 for the first data set and 13.86 for the second reveal that teachers believe that discipline procedures for student control are often monitored by teachers and administrators. The seventh indicator of structural coupling reveals that teachers spend 26 hours in school each week in isolation of other teachers.

Table 1 about here

A further observation is that, as a group, the change in means from the fall to the spring suggests that strength of coupling tends to decrease somewhat as the school year progresses. With the exception of discipline procedures, these descriptive statistics imply relatively loose structural linkages among the components of the school organization. In terms of linkages among the school parts, tightest coupling appears within the operating core. Communication and cooperative planning are highest among the teachers. The linkages between the operating core and the middle line vary according to the topic. Evidently, the coupling of teachers and principals is relatively strong for issues involving student discipline, but communication about instruction and for social discourse occurs infrequently. The low mean values of variables linking the operating core to the technostructure suggest that these parts are loosely coupled.

Table 1
Means and Standard Deviations (SD) for the Variables
in Both Data Collections

Variables	First Collection		Second Collection	
	Mean	SD	Mean	SD
Structural Coupling				
1. Work System Interdependence: Teachers	20.08	8.41	17.53	8.05
2. Communication: Teachers with Teachers	11.27	3.65	10.30	3.44
3. Communication: Teachers with Principal(s)	3.82	1.57	3.74	1.53
4. Discipline Procedures	15.38	2.82	13.86	3.68
5. Communication: Teachers with LD Specialists	4.12	2.70	3.17	2.35
6. Work System Interdependence: Teachers and LD Specialists	6.92	6.06	6.71	6.89
7. Teacher Isolation (Hours)	25.94	6.93	26.60	7.59
Organizational Effectiveness				
8. Perceived Adaptibility	17.87	2.17	17.31	2.95
9. Perceived Goal Achievement	11.41	1.00	11.24	1.52
10. Teacher Job Satisfaction	23.96	2.78	23.44	3.77
11. Student Attitudes	34.23	2.45	32.72	5.63

Perceived adaptability of the schools with a possible range of 5-25 was described by teachers in the fall (mean = 17.87) and spring (mean = 17.31) semesters as being slightly above the conceptual mean of 15. Teachers view their schools as being relatively adaptive. Perceived goal achievement with a potential range of 3-15 and a conceptual mean of 9 had means of 11.41 and 11.24 in the fall and spring, respectively. Teachers view their schools as efficiently producing moderate to high quantities of fair to good quality outcomes. The two remaining variables are above the conceptual means. Teachers describe themselves as being neutral to satisfied with their jobs. With a possible range of 7-35 and a conceptual mean of 21, the means for teacher job satisfaction were 23.96 (fall) and 23.44 (spring). Student attitudes toward the school were positive or above the conceptual mean of 27 with greater variation in the responses for the data set collected in the spring semester than in the fall semester.

Tests of the Hypotheses

The correlation matrices for the eleven variables in both data sets are shown in Table 2. The upper portion of the table contains the coefficients for the data collected in the fall semester and the lower portion reports the coefficients for the data collected in the spring semester. For one-tailed tests of significance, the critical values of r with 87 degrees of freedom are .17 and .24 at the .05 and .01 probability levels, respectively.

Table 2 about here

Structural coupling was hypothesized to be significantly related to four school effectiveness indicators representing the critical functions

Table 2. Correlation Matrices for the Variables in Data Collections One and Two[a] [b]

	1	2	3	4	5	6	7	8	9	10	11
1	-	68*	34*	30*	18*	32*	-42*	32*	28*	12	15
2	63*	-	48*	17*	32*	29*	-37*	24*	24*	10	14
3	41*	45*	-	26*	37*	00	-04	20*	16	-03	-02
4	42*	35*	38*	-	07	-13	-29*	24*	26*	07	-08
5	18*	31*	25*	06	-	35*	-11	20*	32*	-05	19*
6	38*	26*	-07	08	28*	-	-16	31*	40*	22*	29*
7	-25*	-08	01	-02	01	-17*	-	-02	-15	08	-12
8	41*	26*	29*	43*	27*	43*	23*	-	79*	26*	29*
9	42*	35*	21*	46*	24*	37*	26*	81*	-	23*	31*
10	30*	27*	23*	36*	14	17*	32*	60*	67*	-	10
11	19*	24*	22*	35*	07	00	33*	44*	53*	48*	-

[a] The correlation matrix for first data collection comprises the top half of the table and the correlation matrix for the second data collection forms the bottom half. The names for variables 1-11 are given in Table 1.

[b] The coefficients have been multiplied by 100.

* Significant at or beyond the .05 level with 87 degrees of freedom.

of social systems. Partial support was found for each hypothesis across both data collections, although the relationships tended to be stronger with the data collected later in the school year.

For hypothesis one, six of seven in the fall and all seven in the spring of the coupling measures were significantly correlated with perceived adaptability. The magnitudes of the correlations ranged from .20 to .32 for the first data set and .23 to .43 in the second. For hypothesis two similar relationships appeared. Goal attainment was a significant correlate of five coupling variables in the spring and seven in the fall. The size of the coefficients ranged from .24 to .40 and .21 to .46 in the fall and spring respectively. Five variables were consistent and strong correlates of adaptability and goal attainment. They were: work system interdependence of teachers with teachers and with LD specialists, communication among teachers and teachers with LD specialists, and discipline procedures. These variables represent linkages within the operating core, with the middle line to maintain appropriate student behavior, and with the technostructure to plan appropriate activities for students with learning disabilities. The relationships for hypothesis three, for job satisfaction, changed from one statistically significant correlate ($r = .22$) in the fall to six indicators (range of $r = .17$ to .32) of structural coupling in the spring. The type and variables relating student attitudes changed from two variables linking the operating core to the technostructure ($r = .19$ and .29) in the fall data set to the five other coupling variables in the spring. Coupling in the operating core ($r = .19$ and .24), coupling with the middle line ($r = .22$ and .35), and isolation ($r = .33$) replaced the variables linking the technostructure to the operating core as significant correlates of student attitudes.

The coupling variable of work system interdependence of teachers with LD specialists was a significantly related in seven of eight analyses for the four hypotheses. Three other coupling variables--work system interdependence and communication among teachers and discipline procedures--were significantly related in six tests of the four hypotheses. In the case of for teacher isolation, all four correlation coefficients were significant for the spring data, but none in the fall data. As the year progresses, teachers and students evidently equate time in classroom with positive school outcomes. In sum, substantial support was found for the general proposition that structural coupling is significantly related to school effectiveness. Examinations of additional relationships and other findings follow.

Marked and interesting differences occur in the relationships between the independent and dependent variables for the first and second data collection sets. In particular, 25 of 28 (89%) coefficients describing the relationships between the structural coupling and effectiveness variables are significant for the spring data as compared to 14 of 28 (50%) for the fall data. In the second data set, the magnitudes of the correlation coefficients for the coupling and effectiveness variables are much larger than the first. Do these findings mean that the relationships between the coupling and criterion variables do not exist early in the school year or are they not recognized? Time of the year may have important implications for research methods and administrative practices and will be discussed in detail later in this paper.

Related Findings

The 21 correlation coefficients between the seven structural coupling variables for each data collection show similar and supportive results.

The coupling variables tend to be correlated significantly among themselves. With the exception of the coefficient for work system interdependence among teachers and communication among teachers ($r = .68$ for the first collection and $r = .63$ for the second), the magnitudes are not large. In addition, the directions of the coefficients are consistent with the measurement model; that is, all tend to be positively correlated except for teacher isolation which tends, as expected, to be negatively related to the other coupling variables.

Within the effectiveness criteria, significant positive coefficients characterize the relationships. Five of six in the fall and six of six in the spring are significant. The coefficients are also larger in second data set. Therefore, schools effective on one dimension tend to be high on the others.

Discussion

Based on the present data, schools are described by the teachers as being loosely coupled. The mean scores for the structural coupling variables are for the most part low. Cooperative planning and communication events tend to be infrequent, especially for teachers with the LD specialists and principal. In addition, teachers indicate that about 25 or 26 hours per week are spent in isolation of other adults. However, the linkage between teachers and principals on matters of student discipline appear to be relatively tight.

Another important observation is that, with the exception of teacher isolation, six structural coupling variables are positively related to the criterion variables. More tightly coupled schools tend to be more effective. This finding is probably explained by the relatively modest levels of coupling in school organizations. The limited linkages found in the

present study are viewed as facilitating the effectiveness of schools, but dramatic increases in the tight coupling should produce a curvilinear relationship.

As a group the structural coupling variables were consistent correlates of the criterion variables, especially later in the school year. For example, five coupling variables--work system interdependence and communication among teachers, communication of teachers with the principal, discipline procedures and teacher isolation--were significantly related to the four dependent variables in the spring data set. These five variables suggest different levels and types of coupling; that is, modest levels of linkages within the operating linkages between the operating core and middle line, are associated with positive school outcomes, especially in the spring. Yet, as the number of hours per week that teachers spend away from other adults increases, so do the values of the effectiveness criteria. In other works, teacher isolation in the operating core which allows teachers added time to work alone with students is associated with organizational effectiveness.

These findings are highly supportive of Mintzberg's (1979) conception of professional bureaucracies. Discipline procedures and communication of teachers with the principal represent linkages of the teachers in the operating core to the principal staff in the middle line. The function of the linkages include negotiating and handling disturbances in student behavior, an especially important role for the middle line (Mintzberg, 1979: 29, 361-363). Similarly, the relationships for teacher isolation support Mintzberg's (1979: 349-351) contention that professionals in the operating core control their own work, act relatively independently of their colleagues, and work closely with their students. The conclusion that

teachers work alone in their classrooms is further reinforced by the failure of the communication among teachers variable to enter any of the equations.

Support for Mintzberg's model is also provided by relationships of work system interdependence between teachers and LD specialists to perceived adaptablility and goal achievement. Mintzberg (1979: 374-376) noted that a major problem for professional bureaucracies is innovation. New programs cut across existing specialities and call for interdisciplinary efforts. Linkages between the operating core and the to the technostructure allow the teachers to expand their repertoire of standard programs or set of skills that the teachers have ready to apply to predetermined situations. In other words, the cooperative planning with the LD specialists allows the teachers to categorize the students' needs in terms of a standard program of instruction and to apply that program (Mintzberg, 1979: 353). Consequently, linkages with the LD specialists are associated by teachers to school adaptability and goal achievement.

Change In Relationships

The magnitude of the variable means, strength of association, and type of independent variable relating to the school effectiveness criteria exhibited a tendency to change over the course of the year. For example, the means suggest that the strength of the first six structural coupling and expectancy climate factors show slight declines and teacher isolation a slight increase. As discussed above, the correlation coefficients between the coupling with the organizational effectiveness variables increased.

Do the variable relationships exist early in the year are just not recognized by the students and teachers? Or do the structural linkages

start anew each year and evolve into significant relationships by the end of the school year? As noted by Ranson, Hinings, and Greenwood (1980: 2-3) that, while activities and positions may be loosely linked together and while problems, solutions and actors seem to make little structural sense, stability must be acknowledged. Similarly, Porter and Roberts (1976: 1568) maintained that communication patterns in organizations have a continuity through time. This stability critically affects communication patterns, content, and frequency because it gives the individuals an awareness that their activities and interactions are likely to be repeated. However, explanations of the different empirical results for the fall and spring data sets must accommodate existing and emerging patterns of interaction within the school. In most cases new members to the faculty and in all cases new students are added in the fall semester. These new actors not only must learn the work system interdependencies, communication patterns and appropriate educational outcomes, they will to some extent disrupt the continuity of patterns for the experienced educators and students. Another factor is that certain times of the year, such as the opening of school and preparing for fall activities, hold high potential for crises, disruption of the system, and reduced goal attainment. As Burlingame (1979: 3-4) observed, a rhythm of seasons characterizes a school year.

Based on this background, the response to the two questions must include in its explanation of the change a combination of the linkages evolving and becoming known. Some stability exists among the variables from one school year to the next. Most of the educators and students return and react relationships from the previous year. However, new actors who do not know the structural linkages and experienced actors may suffer from uncertainty associated with new actors and opening school activities. One

result is that the associations among the structural and outcome variables are unclear. Another result is that research records this uncertainty as a lack of relationship between the independent and dependent variables. But by the spring semester the linkages have evolved, been learned, and the relationships with the school effectiveness criteria are described with high degrees of association.

Conclusion

This investigation has integrated and tested a series of hypotheses based on structural coupling as conceived by Weick (1976) and Mintzberg (1979), and a composite of school effectiveness indicators representing the critical functions posited by Parsons (1960). Several important relationships have been described that suggest directions for future research efforts.

In agreement with Ranson and his colleagues (1980: 2), a fruitful perspective for future research is the interpenetration of structure, climate and interactions. To study the structural configurations of schools and their effects a useful approach has been developed by Sousa and Hoy (1981). Recently, they have successfully combined objective and perceptual measures for a number of structural factors of schools such as centralization, formalization, standardization, autonomy and technical competence. The use of both types of measures, as compared to the present study, allows an investigator to describe the influences of contextual constraints upon organizational outcomes, independent of the individuals' perception of them.

In addition to the frequency of interdependencies and communication among the parts of the school, richness could be added to our understanding by using sociometric methods to reveal patterns of interaction and to

increase the confidence that the groups studied are, in fact, interacting task groups (O'Reilly & Roberts, 1977: 680). A need also exists to compare the frequencies from two independent sources (Porter & Roberts, 1976: 1582-1583). Since questions of group structure and effectiveness are important for understanding organizational design and development of schools, research is needed to define which aspects of group structure are potential determinants of work system interdependency, communication, climate and performance; that is, whether sociometric or formal structure provides a better representation of interaction and relationships among objective and subjective measures of structural, climate, information flow and organizational effectiveness.

While this study did not address how special efforts to link school parts together actually work, additional studies are needed. The relatively large standard deviations in the coupling variables suggest considerable variation in structural linkages between schools. Cohen, Meyer, Scott, and Deal (1979: 29) found that complexity of organizational structure at an earlier time, complexity of technology, and the extent to which classes are taught in open space schools affect the levels of teacher collaboration. Similarly, Bredo's (1977: 305) data indicate that open space and team policies are predictors of collegial influence. These studies have focused on the operating core. The findings of the present investigation that other arrangements or initiatives from the technostructure and the middle also can affect the level of interaction among teachers.

Additional theoretical and empirical work also is needed on the concept of organizational effectiveness of schools. Too often school effectiveness is defined narrowly as the scores on cognitive tests of academic ability. The present study has used one approach that worked adequately.

Moreover, student attitudes should be used more frequently because they are affected by both structural linkages and expectancy climate. And as suggested by Grandjean (1981: 289) student attitudes also affect the views that their parents hold of the school.

In sum, the present study has provided some insights about the relationships of structural coupling and organizational effectiveness of schools. Much work remains, but fruitful avenues to further our explanations of schools have been reviewed and revealed.

REFERENCES

Angle, H. L. & Perry, J. L. An empirical assessment of organizational commitment and organizational effectiveness. Administrative Science Quarterly, 1981, 26, 1-14.

Baldridge, J. V. & Burnham, R. A. Organizational innovation: Individual, organizational, and environmental impacts. Administrative Science Quarterly, 1975, 20, 165-176.

Belasco, J. A. & Alutto, J. A. Decisional participation and teacher satisfaction. Educational Administration Quarterly, 1972, 8, 44-58.

Bidwell, C. The school as a formal organization. In J. G. March (Ed.) Handbook of organizations. Chicago: Rand McNally, 1965.

Bredo, E. Collaborative relations among elementary school teachers. Sociology of Education, 1977, 50, 300-309.

Bridges, E. M. & Hallinan, M. T. Subunit size, work system interdependence, and employee absenteeism. Educational Administration Quarterly, 1978, 14, 24-42.

Burlingame, M. Some neglected dimensions in the study of educational administration. Educational Administration Quarterly, 1979, 15, 1-18.

Cohen, E. G., Meyer, J. W., Scott, W. R., & Deal, T. E. Technology and teaming in the elementary school. Sociology of Education, 1979, 52, 20-33.

Dornbusch, S. M. & Scott, W. R. Evaulation and the exercise of authority: A theory of control applied to diverse organizations. San Francisco: Jossey-Bass, 1975.

Forsyth, P. B. & Hoy, W. K. Isolation and alienation in educational organizations. Educational Administration Quarterly, 1978, 14, 80-96.

Grandjean, B. D. & Vaughn, E. S., III. Client perceptions of school effectiveness: A reciprocal causation model for students and their parents. Sociology of Education, 1981, 54, 275-290.

Hoy, W. K. & Miskel, C. G. Educational administration: Theory, Research, and Practice, 2nd ed. New York: Random House, 1982.

Lincoln, J. R., Hanada, M. & Olson, J. Cultural orientations and individual reactions to organizations: A study of employees of Japanese-owned firms. Administrative Science Quarterly, 1981, 26, 93-115.

March, J. G. & Olsen, J. P. Ambiguity and choice in organizations. Bergen, Norway: Universitetsforlaget, 1976.

Meyer, J. W. & Rowan, B. The structure of educational organizations. In M. W. Meyer (Ed.), Environments and organizations, San Francisco, Jossey-Bass, 1978.

Meyer, J. W., Scott, W. R., Cole, S. & Intili, J. Instructional dissensus and institutional consensus in schools. In M. W. Meyer (Ed.), Environments and organizations. San Francisco: Jossey-Bass, 1978.

Mintzberg, H. The structuring of organizations. Englewood Cliffs, N.J.: Prentice-Hall, 1979.

Miskel, C. G. Principals' attitudes toward work and co-workers, situational factors, perceived effectiveness and innovation effort. Educational Administration Quarterly, 1977, 13, 51-70.

Miskel, C. G., Bloom, S., and McDonald, D. Structural coupling, climate, and learning strategies intervention effectiveness. Final report. Lawrence: University of Kansas Institute for Research in Learning Disabilities (BEH Contract No. 300-77-0494), 1980.

Miskel, C. G., Fevurly, R. and Stewart, J. Organizational structures and processes, perceived school effectiveness, loyalty, and job satisfaction. Educational Administration Quarterly, 1979, 15, 97-118.

Mohrman, A. M., Jr., Cooke, R. A., Mohrman, S. A. Participation in decision making: A multidimensional perspective. Educational Administration Quarterly, 1978, 14, 13-29.

Mott, P. E. The characteristics of effective organizations. New York: Harper & Row, 1972.

Muchinsky, P. M. Organizational communication: Relationships to organizational climate and job satisfaction. Academy of Management Journal, 1977, 20, 592-607.

O'Reilly, C. A. & Roberts, K. H. Task group structure, communication, and effectiveness in three organizations. Journal of Applied Psychology, 1977, 62, 674-681.

Ouchi, W. G. Coupled versus uncoupled control in organizational hierarchies. In M. W. Meyer (ed.), Environments and organizations. San Francisco: Jossey-Bass, 1978.

Parsons, T. Structure and process in modern societies. New York: Free Press, 1960.

Porter, L. W. & Roberts, K. H. Communication in organizations. In M. D. Dunnette (ed.), Handbook of industrial and organizational psychology (Chicago: Rand-McNally, 1976), pp. 1533-1589.

Ranson, S., Hinings, B. & Greenwood, R. The structuring of organizational structures. Administrative Science Quarterly, 1980, 25, 1-17.

Ratsoy, E. W. Participative and hierarchical management of schools: Some emerging generalizations. Journal of Educational Administration, 1973, 11, 161-170.

Sousa, D. A. & Hoy, W. K. Bureaucratic structure in schools: A refinement and synthesis in measurement. Educational Administration Quarterly, 1981, 17, 21-39.

Steers, R. M. Problems in the measurement of organizational effectiveness. Administrative Science Quarterly, 1975, 20, 546-558.

Steers, R. M. Organizational Effectiveness. Santa Monica, Calif.: Goodyear, 1977.

Thompson, J. D. Organizations in action. New York: McGraw-Hill, 1968.

Weick, K. E. Educational organizations as loosely coupled systems. Administrative Science Quarterly, 1976, 21, 1-19.